

Royal Society, for the purpose of considering what further steps should be taken towards the same end.

It was resolved to invite subscriptions, with the view of erecting a statue of Mr. Darwin in some suitable locality ; and to devote any surplus to the advancement of the biological sciences.

Contributions at once flowed in from Austria, Belgium, Brazil, Denmark, France, Germany, Holland, Italy, Norway, Portugal, Russia, Spain, Sweden, Switzerland, the United States, and the British Colonies, no less than from all parts of the three kingdoms ; and they came from all classes of the community. To mention one interesting case, Sweden sent in 2296 subscriptions "from all sorts of people," as the distinguished man of science who transmitted them wrote, "from the bishop to the seamstress, and in sums from five pounds to two pence."

The Executive Committee has thus been enabled to carry out the objects proposed. A "Darwin Fund" has been created, which is to be held in trust by the Royal Society, and is to be employed in the promotion of biological research.

The execution of the statue was entrusted to Mr. Boehm ; and I think that those who had the good fortune to know Mr. Darwin personally will admire the power of artistic divination which has enabled the sculptor to place before us so very characteristic a likeness of one whom he had not seen.

It appeared to the Committee that, whether they regarded Mr. Darwin's career or the requirements of a work of art, no site could be so appropriate as this great hall, and they applied to the Trustees of the British Museum for permission to erect it in its present position.

That permission was most cordially granted, and I am desired to tender the best thanks of the Committee to the Trustees for their willingness to accede to our wishes.

I also beg leave to offer the expression of our gratitude to your Royal Highness for kindly consenting to represent the Trustees to-day.

It only remains for me, your Royal Highness, my Lords and Gentlemen, Trustees of the British Museum, in the name of the Darwin Memorial Committee, to request you to accept this statue of Charles Darwin.

We do not make this request for the mere sake of perpetuating a memory ; for so long as men occupy themselves with the pursuit of truth, the name of Darwin runs no more risk of oblivion than does that of Copernicus or that of Harvey.

Nor, most assuredly, do we ask you to preserve the statue in its cynosural position in this entrance-hall of our National Museum of Natural History as evidence that Mr. Darwin's views have received your official sanction ; for science does not recognise such sanctions, and commits suicide when it adopts a creed.

No ; we beg you to cherish this Memorial as a symbol by which, as generation after generation of students of Nature enter yonder door, they shall be reminded of the ideal according to which they must shape their lives, if they would turn to the best account the opportunities offered by the great institution under your charge.

The following reply was made by H.R.H. the Prince of Wales :—

PROF. HUXLEY AND GENTLEMEN,—I consider it to be a high privilege to have been deputed by the unanimous wish of my colleagues, the Trustees of the British Museum, to accept, in their name, the gift which you have offered us on behalf of the Committee of the Darwin Memorial. The Committee and subscribers may rest assured that we have most willingly assigned this honourable place to the statue of the great Englishman who has exerted so vast an influence upon the progress of those branches of natural knowledge the advancement of which is the object of the vast collections gathered here. It has given me much pleasure to learn that the memorial has received so much support in foreign countries that it may be regarded as cosmopolitan rather than as simply national ; while the fact that persons of every condition of life have contributed to it affords remarkable evidence of the popular interest in the discussion of scientific problems. A memorial to which all nations and all classes of society have contributed cannot be more fitly lodged than in our Museum, which, though national, is open to all the world, and the resources of which are at the disposal of every student of nature, whatever his condition or his country, who enters our doors.

#### CLAUS'S "ELEMENTARY TEXT-BOOK OF ZOOLOGY"

*Elementary Text-Book of Zoology.* Special Part : Mollusca to Man. By Dr. C. Claus. Translated and edited by Adam Sedgwick, M.A., Fellow and Lecturer of Trinity College, Cambridge, with the assistance of F. G. Heathcote, B.A., Trinity College, Cambridge. (London : W. Swan Sonnenschein and Co., 1885.)

THE first 109 pages of this volume are devoted to the Mollusca and Tunicata, and the remarks offered in NATURE (vol. xxxi. p. 191) in criticism upon Vol. I. apply equally well here.

The information imparted is fully up to date, and the Tunicate section may be taken, on the whole, as a type of that well-balanced and succinct writing indispensable in a work of this order.

The unqualified statement on p. 9 that the mollusca are "*bilaterally symmetrical*" is unfortunate, and typical of a general insufficiency and sketchiness, evident throughout the entire work, in the diagnoses given of the great groups. No better instance of this can be quoted than those relating to the birds and mammals, where characters so vitally important as the modes of articulation of the jaw-apparatus upon the skull are omitted, and, although mentioned elsewhere, are inserted without that emphasis demanded of *primâ facie* characters applicable to both the living and extinct forms.

It is disappointing to find the invertebrate digestive-gland still spoken of as a "liver," no mention being made of the researches of Weber, Barfurth, and others, into its structure and functions. It is highly desirable in a book of this kind that any statements made concerning animals, such as are likely to fall into the hands of the average student, should be absolutely reliable. It cannot be said (p. 52) that the shell of Aplysia is "covered by two lobes of the foot," and the beginner would soon find that *Limax* and *Arion* are not the only common Gasteropods in which the pedal gland is present, while,

from the statements made on p. 27 he would never infer that the common *Anodon* shell is destitute of teeth. The *Argonauta*, although somewhat less commonplace than the aforementioned, is to be found in our museums, and no mention is made in this volume of the exceptional characters of its shell—in fact, the beginner would rather infer from the descriptions given that it is a normal Cephalopod shell. Less pardonable are the inadequate remarks devoted to the rest of the Cephalopod group, which are especially unfortunate in their reference to connecting-links with the extinct forms. The anomalous but characteristic *Aptychi* go without a mention.

Viewed in the light of Prof. Moseley's recent discoveries, the reasons adduced on p. 44 for the absence of the cerebral ganglia in *Chiton* are of some interest, as a caution against making too sweeping generalisations.

Under the head of Molluscoidea there is a bare mention of the genus *Rhabdopleura*, and we are at a loss to conceive why the reference to this important form printed in the original index should have been omitted in the translation.

Turning now to that portion of the work which follows, the fact that but 231 pages are devoted to the Vertebrata, exclusive of Tunicates, is sufficient in itself to raise suspicion, especially when we reflect that 115 pages of Vol. I. are given up to Tracheates alone. When Mr. Sedgwick published the first volume of this work it was patent to any one familiar with the original that nothing short of a complete revision of the Vertebrate section could justify that claim set up by him in his translator's preface. Having admitted his willingness to supplement the original where he "thought it necessary"—thereby, we presume, countenancing the weakness of the volume now before us—it is surprising to find how little he has carried that resolve into execution, the more so as he acknowledges the assistance and advice of others, some of whom are authorities. That this defect is not due to any want of intention on the translator's part is clear from insertions such as that on p. 167; but we look in vain for dozens of other similar modifications, connected with matters of infinitely greater importance than that just referred to. Similarly, why should the recent discovery of the meroblastic segmentation of the *Monotreme's* egg be inserted by the translators and referred to some two or three times when there is no mention whatever of the far more weighty characters of the skull of that group? Even were defects such as the above-named rectified, the book would still remain wholly insufficient and incompetent. The exclusive use of the old classification of birds—the dogmatic statements made concerning many of the most involved fields of Vertebrate morphology; for example, that of the auditory ossicles, where Reichert's views are alone given—the entire omission of any description of such a characteristic structure as the lizard's hind-limb and ankle-joint—the feeble and confused descriptions of the vertebrate skull, obvious throughout the entire work and ushered in on p. 118 by the barbarous "*os linguale*" and "*copula*"—the ambiguous statements made on p. 124 concerning the vertebrate diaphragm, which still (p. 250) finds its place among the respiratory organs of birds, are, to say nothing of other similar defects, sufficient in themselves to stamp the vertebrate portion of the Text-book as little short of a failure.

That that section of the work falls short of the needs of the English-speaking student is certain, especially as it is so far behind other manuals current in the tongue. Errors, the bare enumeration of which would be superfluous, are predominant on all hands, and the retention of the "*Cetacea Carnivora*" and "*Cetacea Herbivora* or *Sirenia*" (*sic*) of the ancients, is, leaving the *Hydrosauria* with its sub-classes aside, certainly not creditable to any one concerned. We heartily recommend the invertebrate portion of the work to the student. He may find that which follows useful, but he need be no specialist to see that it is insufficient on all points, and absolutely inaccurate and misleading on many of vital importance. It but remains to enumerate certain of the more conspicuous defects, respecting which at least, should a second edition of the work be demanded, it is to be hoped that the translators will see fit to effect an alteration.

The cumbrous and fanciful method of accounting (p. 113) for the characters of the thoracic region of the vertebrate body is to be regretted, leading the beginner, as it does to suppose this to be the most modified region of the trunk—a conception the precise reverse of that which the properly-trained student will soon form for himself. The exclusion of the teeth from the list (p. 119) of dermal derivatives and the complete confusion between scutes and scales evident throughout, are but slight faults compared with such as we have already enumerated. On p. 127 we are introduced to a thorough mixing up of the urinary receptacle of fishes with the allantoic bladder of Amniotes—a serious error, and one which the translator ought to have been expected to rectify.

The above remarks apply more especially to the general part of the vertebrate section of the work; but, on passing to that treating of the special groups, we find a general feebleness nowhere more evident than in that portion devoted to fishes. The diagnoses of that group are meagre in the extreme, and descriptions of even their tails such as are given on p. 164 are wanting in accuracy. No wonder, then, that the "jugular" pelvic fin should be once more to the front, that there is a disregard of characters so important as are those of the maxillary apparatus of Teleostei, and that such genera as *Albula*, *Cheirocentrus*, *Megalops*, &c., go unnoticed. The treatment of the *Sauropsida* is no less unfortunate than the above. Reference has already been made to some of the more conspicuous defects of this section, barely less pardonable than which are the bad descriptions of the bird's manus (p. 237) and the bare mention of the structure of the avian lung.

We are told on p. 243 that birds possess a rudimentary "*corpus callosum*," no mention being made of that tract which may probably answer to it in Amphibia. The treatment of the *Sauropsidian* pelvis and of the bird's shoulder-girdle are miserably poor, and the student is informed on p. 196 that Crocodiles possess an "*abdominal sternum*," which is "composed of a number of ventral ribs (without dorsal part)"; he will learn a valuable lesson who—Prof. Claus's manual in hand—discovers for himself that the ventral sternal ribs and these abdominal splints coexist in Hatteria, skeletons of which are now to be found in our museums. Considering the above facts, it is not surprising that nearly all reference to important

matters of affinity between living birds and reptiles should be overlooked. The characters of the mesotarsal joint and of the tarso-metatarsus are imperfectly defined, and those of the pelvis of Apteryx ignored; while among the extinct forms, the Dinosauria—several of whose features we are told on p. 220 “recall mammals, especially the Pachydermata”—the Ornithoscelida, and the Odontornithes, are all dismissed in a few lines. Little would the student, taking his text from this work, dream of the noble array of direct affinities to be found among even living birds and reptiles.

The translators have evidently realised that the statements reproduced on pp. 198 and 215, concerning the lizard's quadrato-jugal arcade are contradictory, and a supplemental paragraph of their own on p. 198 only serves to increase the perplexity. Chapter IX. is devoted to the Mammalia, but 69 pages of it starting with the assertion (p. 282) that the Monotremes' hemispheres are “still smooth,” is poor fare. The cutting down of every group of mammals to a minimum would be in a sense pardonable, if only concise diagnoses were given such as should cover the broad lines of modification; but when, bearing in mind certain of the more glaring defects of this chapter referred to at the outset, we read (p. 306) that the Whales approach the Ungulates “through the Sirenia,” and that the “Sirenia are intermediate, so far as their form is concerned, between the whales and seals” (p. 309), our faith is shaken in that which remains. There is the usual confusion concerning the position and movements of the hind-limbs of the Pinnipedia, the condition of the parts in the eared seals being entirely overlooked. In diagnosing a group of animals for purposes such as are here required, where the living and the extinct are both under consideration, it is but fair to assume that special attention should be paid to the hard parts, the teeth not excepted; but we look in vain for statements such as shall embody the extremes of modification of these parts in any one group of living mammals—for example, in dealing with the Rodents the utmost sketchiness prevails, the modifications of even the fibula are not hinted at, and while Hydromys is placed among the mice with grinders  $\frac{3}{3}$ , Heliophobius is not mentioned. No wonder, then, that Hyæmoschus should go unnoticed, that Hyrax should here be found under the order Proboscidea (with a caution, it is true), and that the Carnivora, Cheiroptera, Lemurs, and Primates should be treated with disrespect. We are told (p. 301) that the epipubes support the marsupial pouch, and there is no reference at all to the most important facts concerning the marsupial dentition. There is something so specifically English about gross vertebrate anatomy that we search in vain for bare mention, not to say recognition, of discoveries bearing upon the above, and many similar matters of first importance.

From what has been said it will be obvious to English students that the vertebrate section of Prof. Claus's manual is weakest where works on the subject already current in our language are strong; and, with all respect to our Continental cousins, we are of opinion that the market is becoming overstocked with translations such as that before us. Their period is past; the English student in earnest must sooner or later fit himself for access to the originals, and the repeated production of English versions serves only to prolong the fatal day. We

cannot but regret, though reluctantly, the publication of this work in its present form, the more so as it threatens to encourage the growing tendency to under-estimate the value of gross vertebrate anatomy, a field of labour essentially English, but still the very backbone of zoological science.

Mr. Sedgwick has performed the task of translation with a thoroughness and skill deserving the thanks of his countrymen. Some few passages in the original, at best clumsy, might have been better rendered than they are; and settings such as the “above together,” on p. 16, might be advantageously modified. The translators give in Vol. I. a list of English synonyms for the geological terms employed in the original, but these are not always adopted in Vol. II.; thus we find the Jurassic beds referred to again and again as the “Jura,” a rendering certainly not that of English geologists. The original illustrations are for the most part excellent, and those which remain are admirably selected. That on p. 284, however, certainly does not illustrate the anatomy of the human ear, and the figures selected from the classic of Johannes Müller, in illustration of the anatomy of the lamprey's skull (p. 154) do scant justice to the work of a great genius, and he a German.

G. B. H.

#### CLIFFORD'S EXACT SCIENCES

*The Common Sense of the Exact Sciences.* By the late W. K. Clifford. (London: Kegan Paul, Trench, and Co., 1885.)

ONCE more a characteristic record of the work of a most remarkable, but too brief, life lies before us. In rapidity of accurate thinking, even on abstruse matters, Clifford had few equals; in clearness of exposition, on subjects which suited the peculiar bent of his genius and on which he could be persuaded to bestow sufficient attention, still fewer. But the ease with which he mastered the more prominent features of a subject often led him to dispense with important steps which had been taken by some of his less agile concurrents. These steps, however, he was obliged to take when he was engaged in exposition; and he consequently gave them (of course in perfect good faith) without indicating that they were not his own. Thus, especially in matters connected with the development of recent mathematical and kinematical methods, his statements were by no means satisfactory (from the historical point of view) to those who recognised, as their own, some of the best “nuggets” that shine here and there in his pages. His *Kinematic* was, throughout, specially open to this objection:—and it applies, though by no means to the same extent, to the present work. On the other hand, the specially important and distinctive features of this work, viz. the homely, yet apt and often complete, illustrations of matters intrinsically difficult, are entirely due to the Author himself.

The Editor, in his *Preface*, tells us the whole story of the difficulties he had to face in completing the volume for press. All will sympathise with him when they find that he had to furnish one entire chapter, and large portions of two others, in addition to thorough revision of the whole. For Clifford's style is here entirely *sui generis*. The track to his homely yet hardy expositions often lay in regions where but a single careless step would have led